



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,179	11/26/2003	Jong Chul Bang	K-0586	6624
34610	7590	03/02/2006	EXAMINER	
FLESHNER & KIM, LLP			RINEHART, KENNETH	
P.O. BOX 221200				
CHANTILLY, VA 20153			ART UNIT	PAPER NUMBER
			3749	
DATE MAILED: 03/02/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/721,179

Applicant(s)

BANG, JONG CHUL

Examiner

Kenneth B. Rinehart

Art Unit

3749

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21, 23-29 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-21, 23-29 and 31-33 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/5/05, 11/26/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Response to Arguments***

Applicant's arguments with respect to claims 1-21, 23-29, 31, 32 have been considered but are moot in view of the new ground(s) of rejection. Regarding claim 24, the first coil array consists of top most element of 10a and the bottom most element of 10a, then symmetry exists with the top most element of 10b and the bottom most element of 10b in close proximity (about) to the plate, giving the claim its broadest reasonable interpretation.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-13, 14, 16-19, 23-29, 31, 32, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherrill (5925273). Sherrill discloses a heater case having an air passage formed therein (fig. 1); a plate configured to partition the air passage into an upper passage and a lower passage (14, fig. 2); and independent first and second coil arrays provided in the air passage and configured to alternately cross the plate between the upper and lower passages (22a, 22b, fig. 2), a plurality of first coils of the first coil array are positioned at a predetermined distance from a corresponding plurality of second coils of the second coil array (fig. 2), each of the first and second coil arrays is electrically connected as a single unit (fig. 2), the first and second coil arrays each comprise a plurality of coils provided at upper and lower portions of each coil array (fig. 2), the plurality of first coils of the first coil array are positioned at a

Art Unit: 3749

predetermined interval in an airflow direction from the corresponding plurality of second coils of the second coil array (fig. 2), the first and second coil arrays are configured to be separately controlled (col. 3, lines 22-30), the first and second coil arrays are configured to alternately to cross the plate between the upper and lower passages (col. 3, lines 22-30), a dryer comprising the heater assembly of claim 10 (col. 2, line 45), the first coil array is symmetrical to the second coil array along a predetermined line of symmetry of the air passage (fig. 2), a heater case (fig. 1); a plate provided in the case and configured to partition the case into an upper portion and a lower portion (14, fig. 2); a first coil array comprising a plurality of upper first coils, the plurality of first coils comprising a plurality of upper first coils positioned in the upper portion of the case, and a plurality of lower first coils positioned in the lower portion of the case (fig. 2); and a second coil array comprising a plurality of second coils, the plurality of second coils comprising a plurality of upper second coils positioned in the upper portion of the case, and a plurality of lower second coils positioned in the lower portion of the case (fig. 2) wherein the first coil array is symmetrical to the second coil array about the plate (fig. 2), wherein the first coil array is configured to operate as a single unit, and wherein the plurality of first coils are arranged in the first coil array such that the upper and lower first coils form an alternating pattern (fig. 2), The first coil array is configured to cross the plate as the first coil array alternates between the upper and lower first coils (fig. 2), The second coil array is configured to operate as a single unit independent of the first coil array, and wherein the plurality of second coils are arranged in the second coil array such that the upper and lower second coils form an alternating pattern (col. 3, lines 22-28), the alternating pattern formed by the upper and lower first coils is a mirror image of the alternating pattern formed by the upper and lower second coils (fig. 2), the second coil array

Art Unit: 3749

is configured to cross the plate as the second coil array alternates between the upper and lower second coils (fig. 2), the first and second coil arrays each form a zigzag pattern (fig. 2), the heater of claim 24 (fig. 2), the first and second coil arrays are configured to alternately cross the plate so as to form a zigzag pattern (fig. 2), the plurality of upper first and second coils form an alternating pattern in the upper portion of the case, and the plurality of lower first and second coils form an alternating pattern in the lower portion of the case (coils are in succession, fig. 2). Sherrill discloses applicant's invention substantially as claimed with the exception of the first coil array comprise a plurality of first coils alternately positioned in the upper and lower passages, and the second coil array comprises a plurality of second coils alternately positioned in the upper and lower passages such that the first and second coils positioned in the upper passage form alternating pattern, and the first and second coils positioned in the lower passage form an alternating pattern, coil of the first coil array is positioned between each set of adjacent second coils, in the lower passage and a second coil of the second coil array is positioned between each set of adjacent first coils in the upper passage, a coil of the first coil array is positioned between each set of adjacent second coils in the lower passage, and a second coil of the second coil array is positioned between each set of adjacent first coils in the upper passage. At the time the invention was made it would have been an obvious matter of design choice to a person of ordinary skill in the art to have a plurality and first and second coils positioned because applicant has not disclosed that the number or location provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either the quantity and location of

Art Unit: 3749

Sherril or the claimed quantity an location because both quantities and location perform the same perform the same function of providing separably controllable coils equally well.

Claims 1-5, 7- 9, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drews et al (4700495) in view of Sherril (5925273). Drews et al discloses A dryer, comprising: a cabinet; a drum provided in the cabinet and configured to be in rotational communication with a motor; and a heater assembly coupled to the drum (fig. 2), comprising: a heater case having an air passage formed therein (fig. 3); a plate configured to partition the air passage into an upper passage and a lower passage (84, fig. 3), the upper and lower portions lie on centerlines of the upper and lower passages, respectively (fig. 3), the plate is positioned along the predetermined line of symmetry of the air passage (fig. 3). Drews et al discloses applicant's invention substantially as claimed with the exception of and independent first and second coil arrays provided in the air passage and each configured to cross the plate between the upper and lower passages, wherein the first coil array comprises a plurality of first coils alternately positioned in the upper and lower passages, and the second coil array comprises a plurality of second coils alternately positioned in the upper and lower passages such that the first and second coils positioned in the upper passage form an alternating pattern, and the first and second coils positioned in the lower passage e form an alternating pattern, a plurality of first coils of the first coil array ate positioned at a predetermined distance from a corresponding plurality of second coils of the second coil array, the first coil array is symmetrical to the second coil array along a predetermined line of symmetry of the air passage, each of the first and second coil arrays is electrically connected as a single unit, the first and second coil arrays each comprise a plurality of coils provided at upper and lower portions of each coil array, the plurality of coils of the first

Art Unit: 3749

coil array are positioned at a predetermined interval along an air flow direction from the corresponding plurality of coils of the second coil array, the first and second coil arrays are configured to be separately controlled, the first and second coil arrays are configured to alternately cross the plate so as to form a zigzag pattern, each of the plurality of first coils is positioned substantially directly across from a corresponding second coil of the plurality of second coils on the opposite side of the plate. Sherril teaches and independent first and second coil arrays provided in the air passage and each configured to cross the plate between the upper and lower passages (col. 3, lines 22-30), a plurality of first coils of the first coil array are positioned at a predetermined distance from a corresponding plurality of second coils of the second coil array (fig. 2), the first coil array is symmetrical to the second coil array along a predetermined line of symmetry of the air passage (fig. 2, col. 3, lines 10-12), each of the first and second coil arrays is electrically connected as a single unit (fig. 2), the first and second coil arrays each comprise a plurality of coils provided at upper and lower portions of each coil array (fig. 2), the plurality of coils of the first coil array are positioned at a predetermined interval along an air flow direction from the corresponding plurality of coils of the second coil array (fig. 2), the first and second coil arrays are configured to be separately controlled (col. 3, lines 22-30), the first and second coil arrays are configured to alternately cross the plate so as to form a zigzag pattern (fig. 2), wherein the first coil array comprises a plurality of first coils alternately positioned in the upper and lower passages, and the second coil array comprises a plurality of second coils alternately positioned in the upper and lower passages such that the first and second coils positioned in the upper passage form an alternating pattern, and the first and second coils positioned in the lower passage form an alternating pattern, (coils are in succession, fig. 2),

Art Unit: 3749

each of the plurality of first coils is positioned substantially directly across from a corresponding second coil of the plurality of second coils on the opposite side of the plate (fig. 2) for the purpose of improving marketability of the product. It would have been obvious to one of ordinary skill in the art to modify Drews et al by including and independent first and second coil arrays provided in the air passage and each configured to cross the plate between the upper and lower passages, a plurality of first coils of the first coil array are positioned at a predetermined distance from a corresponding plurality of second coils of the second coil array, the first coil array is symmetrical to the second coil array along a predetermined line of symmetry of the air passage, each of the first and second coil arrays is electrically connected as a single unit, the first and second coil arrays each comprise a plurality of coils provided at upper and lower portions of each coil array, the plurality of coils of the first coil array are positioned at a predetermined interval along an air flow direction from the corresponding plurality of coils of the second coil array, the first and second coil arrays are configured to be separately controlled, the first and second coil arrays are configured to alternately cross the plate so as to form a zigzag pattern, wherein the first coil array comprises a plurality of first coils alternately positioned in the upper and lower passages, and the second coil array comprises a plurality of second coils alternately positioned in the upper and lower passages such that the first and second coils positioned in the upper passage form an alternating pattern, and the first and second coils positioned in the lower passage form an alternating pattern, each of the plurality of first coils is positioned substantially directly across from a corresponding second coil of the plurality of second coils on the opposite side of the plate as taught by Sherril for the purpose of improving marketability of the product.



Claim 15, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherrill (5925273). Sherrill discloses a heater case having an air passage formed therein (fig. 1); a plate configured to partition the air passage into an upper passage and a lower passage (14, fig. 2); and independent first and second coil arrays provided in the air passage and configured to alternately cross the plate between the upper and lower passages (22a, 22b, fig. 2), the first coil array is symmetrical to the second coil array along a predetermined line of symmetry of the air passage (fig. 2), the first and second coil arrays each comprise a plurality of coils provided at upper and lower portions of each coil array (fig. 2), the plurality of upper first and second coils form an alternating pattern in the upper portion of the case, and the plurality of lower first and second coils form an alternating pattern in the lower portion of the case (coils are in succession, fig. 2). Sherrill discloses applicant's invention substantially as claimed with the exception of the plate is positioned along the predetermined line of symmetry of the air passage, upper and lower portions of each coil array lie on centerlines of the upper and lower passages, respectively, a coil of the first coil array is positioned between each set of adjacent second coils in the lower passage, and a second coil of the second coil array is positioned between each set of adjacent first coils in the upper passage. At the time the invention was made it would have been an obvious matter of design choice to a person of ordinary skill in the art to have the plate is positioned along the predetermined line of symmetry of the air passage, upper and lower portions of each coil array lie on centerlines of the upper and lower passages, respectively, a coil of the first coil array is positioned between each set of adjacent second coils in the lower passage, and a second coil of the second coil array is positioned between each set of adjacent first coils in the upper passage because applicant has not disclosed that the location provides an advantage, is used for a

Art Unit: 3749

particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either the location of Sherrill or the claimed location because both locations perform the same function equally well.

***Allowable Subject Matter***

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

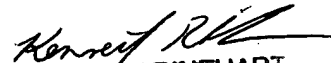
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth B. Rinehart whose telephone number is 571-272-4881. The examiner can normally be reached on 7:20 -4:20.

Art Unit: 3749

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg can be reached on 571-272-4828. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

kbr

  
KENNETH RINEHART  
PRIMARY EXAMINER